

$0.005\% \leq C \leq 0.02\%$

$S \leq 0.001\%$

$0.0001\% \leq Ca \leq 0.002\%$

$0.0001\% \leq Mg \leq 0.002\%$

the chemical composition of the alloy furthermore satisfying the relationships:

$Co + Ni \leq 38.5\%$

$Co + 0.5 \times Ni \geq 20\%$

$Co + 5 \times Ni \geq 165.5\%$

wherein % is % by weight, and

$S \leq 0.02 \times Mn + 0.08 \times Ca + 0.6 \times Mg$

wherein said alloy has a martensitic transformation start point of less than  $-186^{\circ}C$  and an average coefficient of thermal expansion between  $20^{\circ}$  and  $100^{\circ}C$  of from  $0.7 \times 10^{-6}/K$  to  $0.49 \times 10^{-6}/K$ .

10. (New) The alloy as claimed in Claim 9, wherein the average coefficient of thermal expansion is from  $0.65 \times 10^{-6}/K$  to  $0.49 \times 10^{-6}/K$ .

11. (New) The alloy as claimed in Claim 9, wherein copper, molybdenum, vanadium and niobium are each present in amounts less than 0.1%.

12. (New) The alloy as claimed in Claim 11, wherein the sum of the weight percentages of manganese, silicon, chromium, copper, molybdenum, vanadium and niobium is less than 0.3%.

13. (New) The alloy as claimed in Claim 9, wherein the oxygen content is less than or equal to 0.01%, the nitrogen content is less than or equal to 0.005%, and the phosphorus content is less than or equal to 0.005%.

14. (New) The alloy as claimed in Claim 11, wherein the oxygen content is less than or equal to 0.01%, the nitrogen content is less than or equal to 0.005%, and the phosphorus content is less than or equal to 0.005%.

15. (New) The alloy as claimed in Claim 12, wherein the oxygen content is less than or equal to 0.01%, the nitrogen content is less than or equal to 0.005%, and the phosphorus content is less than or equal to 0.005%.

16. (New) A shadow mask, which comprises at least one foil having holes, said foil comprising an alloy, said alloy consisting essentially of iron and

$32\% \leq Ni \leq 34\%$

$3.5\% \leq Co \leq 6.5\%$

$0\% \leq Mn \leq 0.1\%$

$0\% \leq Si \leq 0.1\%$

$0\% \leq Cr \leq 0.1\%$

$0.005\% \leq C \leq 0.02\%$

$S \leq 0.001\%$

$0.0001\% \leq Ca \leq 0.002\%$

$0.0001\% \leq Mg \leq 0.002\%$

the chemical composition of the alloy furthermore satisfying the relationships:

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$Co + 5 \times Ni \geq 165.5\%$

wherein % is % by weight, and

$S \leq 0.02 \times Mn + 0.08 \times Ca + 0.6 \times Mg$

C /

wherein said alloy has a martensitic transformation start point of less than -186°C and an average coefficient of thermal expansion between 20° and 100°C of from  $0.7 \times 10^{-6}/K$  to  $0.49 \times 10^{-6}/K$ .

17. (New) The shadow mask of Claim 16, wherein the average coefficient of thermal expansion is from  $0.65 \times 10^{-6}/K$  to  $0.49 \times 10^{-6}/K$ .

18. (New) A method of forming a shadow mask, comprising

forming holes in a foil and

drawing said hole-containing foil,

wherein said foil comprises an alloy consisting essentially of iron and

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$3.5\% \leq Co \leq 6.5\%$

$0\% \leq Mn \leq 0.1\%$

$0\% \leq Si \leq 0.1\%$

$0\% \leq Cr \leq 0.1\%$

$0.005\% \leq C \leq 0.02\%$

$S \leq 0.001\%$

$0.0001\% \leq Ca \leq 0.002\%$

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